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ABSTRACT

The relationship between interpersonal cognitive problem-solving (ICPS) skills and the behavioral adjustment of 30 hyperactive boys (from 5.5 to 12.5 years of age) was examined. Each S was individually administered two problem solving measures to assess alternative thinking and means-end thinking. The childrens' self-concept was also assessed and teachers' ratings of behavior were obtained. These ratings provided an index of adjustment and allowed delineation of subgroups based on degree of problematic behavior. The results indicated that teachers' behavior symptom ratings of hyperactivity and aggressiveness were significantly correlated, whereas attention and hyperactivity were not. The number of means generated by the subjects was significantly correlated with teachers' ratings; however, this relationship was mediated by age. In fact, age was the only significant predictor of teachers' behavior ratings. These findings did not support the premise that the ICPS skills are mediators of the behavioral adjustment of the hyperactive children. Continued replication and refinement of ICPS theory and its application with special populations is recommended. (Author/CL)

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Interpersonal Problem-Solving Skills of Hyperactive Children

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Abstract

The relationship between interpersonal cognitive problem-solving (ICPS) skills and the behavioral adjustment of 30 hyperactive boys (from 5.5 to 12.5 years of age) was examined. Each of the subjects was individually administered two problem solving measures to assess (1) alternative thinking and (2) means-end thinking. The childrens' self-concept was also assessed. Teachers' ratings of behavior were obtained for all the children. These ratings provided an indice of adjustment and allowed delineation of subgroups based on degree of problematic behavior. The results indicated that teachers' behavior symptom ratings of hyperactivity and aggressiveness were significantly correlated, whereas attention and hyperactivity were not. The number of means generated by the subjects was significantly correlated with teachers' ratings, however, this relationship was mediated by age. In fact, age was the only significant predictor of teachers' behavior ratings. These findings do not support the premise the ICPS skills are mediators of the behavioral adjustment of the hyperactive children in the present study. Continued replication and refinement of ICPS theory and its application with special populations is recommended.

Interpersonal Problem Solving Skills of Hyperactive Children

Hyperactivity is a childhood behavior disorder that has generated substantial interest in recent years. An estimated 4 to 10 percent of all elementary school-aged children, mostly boys, are considered to be hyperactive by their teachers and/or parents, and approximately 50 percent of all childhood behavioral disorder referrals are for hyperactivity (Barkley, 1981; Ross & Ross, 1982). Most of these children are diagnosed as having an Attention Deficit Disorder with Hyperactivity (ADDH), according to DSM-III (American Psychiatric Association, 1980) criteria.

Where both scientific and public interest are great, many controversies are bound to develop, and they have with this disorder. Despite the magnitude of the problem and a vast amount of research, many disagreements exist regarding the diagnosis, prognosis, and the treatment of these children. One approach to resolving some of this confusion has focused on the identification of subgroups of hyperactive children that differ in behavioral patterns (Barkley, 1981; Henker & Whalen, 1980; Rapoport & Ferguson, 1981; Ross & Ross, 1976; Whalen, 1983). Focusing on subgroups of

hyperactive children may allow delineation of qualitatively different subgroups as well as specification of interventions.

Progress in subcategorizing hyperactive children based on independent behavioral dimensions of hyperactivity and aggression has been reported by Loney, Langhorne, and Paternite (1978); O'Leary and Steen (1982); Milich, Loney, and Landau (1982); and Prinz, Connor, and Wilson (1981). Loney and her colleagues reported subcategorization of a group of hyperactive children based on 13 behavioral symptoms. Based on the these findings, O' Leary and Steen (1982) developed the Stony Brook Scale (SBS), which provided an independent assessment of hyperactivity and aggressiveness in a sample of children diagnosed as hyperactive. Research has also revealed that while some hyperactive children are aggressive, others are not (Milich et al., 1982; O'Leary & Steen, 1982; Prinz et al., 1981). Moreover, Loney et al. found that aggression in early ages is a significant predictor of later antisocial behaviors, whereas hyperactivity is not.

In general, recent investigations (Loney et al., 1982; Milich et al., 1982; O'Leary et al., 1982; Prinz et al., 1982) have shown that it is not only feasible

but also desirable to differentiate hyperactive and aggressive dimensions of behavior. However, other researchers have not been as successful. For example, Lahey, Green, and Forehand (1980) found conduct disorder and hyperactivity to be highly correlated. These findings are, however, not directly comparable with those of Loney et al. (1982) and O'Leary et al., (1982) since this sample consisted of a heterogenous group of elementary school children. In addition, the behaviors characteristic of "conduct disorder" may differ from "aggressive" behaviors. Thus, in summary, there appears to be some evidence indicating the independence of hyperactivity and aggression for a specific group of children (i.e, those referred for hyperactivity) but not for children in general.

Social Skills

Interpersonal functioning is one of the major problem domains for many hyperactive children. Not only are interpersonal difficulties a prime complaint when children are initially referred, but they also tend to persist throughout adolescence and often into adulthood (Loney, Weissenburger, Woolson, & Litchy, 1979; Milich & Landau, 1983; Weiss, Hechtman, & Perlman, 1979).

Hyperactive children often lack the skills required for effective interpersonal interactions (Whalen, 1983). Although there appears to be no impairment in their social interest or rate of interaction, their behaviors are often considered inappropriate and annoying to others (Klein, Gittelman, Quitkin, & Rifkin, 1980). Furthermore, the processing of interpersonal information and social cues seems to be a difficulty for these children (Whalen, Henker, Collins, McAuliffe, & Vaux 1979). Considering the frequency and persistence of social problems among hyperactive children it is necessary to further investigate these processes. This understanding may, in turn, foster the development of intervention programs that promote the social adjustment of hyperactive children.

Fostering social competence and behavioral adjustment has been the focus of many investigations. Psychologists have used a variety of interventions in attempts to ameliorate and prevent maladjustment. In one such line of research investigators have demonstrated that there are distinct differences in the way that adjusted and non-adjusted individuals conceptualize and solve interpersonal problems (e.g., Shure, Newman, & Silver, 1973; Shure & Spivack, 1979, 1982; Spivack, Platt, & Shure, 1976).

The differences between adjusted and non-adjusted individuals are evident for the following cognitive processes: (1) alternative thinking (i.e., the ability to generate multiple alternative solutions to a conflict situation); (2) means-end thinking (i.e., the ability to formulate a set of specific actions needed to reach a desired goal); and (3) consequential thinking (i.e., the ability to anticipate both immediate and long-term consequences to a particular solution and to use this information in decision making) (see Pelligrini & Urbain, 1985; Urbain & Kendall, 1980 for reviews). Spivack and Shure (1974, 1982) theorize that these interpersonal cognitive problem-solving (ICPS) skills are antecedent and, thus, mediate social competence and behavioral adjustment. For example, children who were rated by their teachers as overly impulsive or inhibited were more deficient in ICPS skills (e.g., generated fewer alternatives) than their better adjusted peers (Spivack et al., 1976).

Such possible linkages between cognitive processes and behavioral adjustment have motivated researchers to develop ICPS training programs designed to improve children's social competence.

In general, the investigation of interpersonal problem-solving skills in children has focused on: (1) group comparisons and (2) interventions designed to enhance ICPS skills. However, despite a large body of research (e.g., Gesten et al., 1982; Gillespie, Durlak, & Sherman, 1982; Mckim, Weissberg, Cowen, Gesten, & Rapkin, 1982) questions remain regarding the two fundamental assertions underlying this research: (1) the connection between ICPS skills and adjustment; and (2) the salutary effects of training.

A primary difficulty in arriving at unequivocal conclusions regarding these assertions arises from the use of disparate age groups, outcomes measures, and research designs. Recently, meta-analytic techniques were used to integrate the findings within this domain of research and, as a result, elucidate the relationship between problem solving skills and behavioral adjustment (Almeida & Denham, 1984).

The results of several meta-analyses indicated that, in general, the model and interventions delineated by Shure and Spivack (1979, 1980, 1982) do show reliable effects across studies. These effects are, however, not always large and therefore cast doubt on the pratical application of the theory. Although a relationship

between ICPS skills and behavioral ratings as well as behavior observations exist, the magnitude is small. Other aspects such as length and type of intervention, and whether aberrant students profit more from training than do normal ones should also be examined. For example, studies have shown that ICPS training merely "loosens the tongue" of behaviored disordered children (Camp, Blom, Herbert, & vanDoornick, 1977; Sharp, 1981). They give many alternatives, but quite aggressive ones. Similarly, Deluty (1981a) found that aggressive, assertive, and submissive fifth and seventh grade children differed significantly in the "types" of alternatives they offered rather than in the number of alternatives generated.

In summary, recent investigations have provided insight regarding the role of ICPS skills in determining behavioral adjustment. The findings appear to indicate differential linkages of ICPS skills and adjustment for different ages (e.g., Marsh, 1982) and for different groups of children (e.g., Deluty, 1981a, 1981b; Mckim et al., 1982). Futhermore, the effectiveness and/or quality of alternative solutions, rather than the number of alternative generated, have been shown to be related to behavioral adjustment of older children (Deluty,

1981a, 1981b; Gesten et al., 1982; Marsh, 1982; Mckim et al., 1982). Closer investigation of the application of ICPS training for special populations as well as the specification of ICPS/adjustment linkages for such populations is necessary.

In spite of a large body of research, the relationship between ICPS skills and the behavioral adjustment of hyperactive children has not been assessed. Investigation of the social problem solving skills of these children merits consideration since social difficulties are a persistent problem throughout the hyperactive child's development.

The general objective of the present study was to evaluate the relationship between ICPS skills and the behavioral adjustment of hyperactive children. Based on the theoretical premise that ICPS skills are mediators of behavior adjustment (e.g., Shure & Spivack, 1979, 1982), a significant correlation was expected between teachers' ratings of behavior and ICPS skills. In addition, the present study evaluated whether the quantity/quality of these skills mediate specific behaviors. It was hypothesized that ICPS skills would be different for hyperactive and aggressive constellations of behaviors. Specifically, that

children rated as both hyperactive and aggressive (HA-AGG) (i.e., more problematic) would exhibit fewer ICPS skills (means and alternatives) than children rated as mostly hyperactive (HA).

Method

Subjects

The participants in the present study were 30 boys. All of the children had been referred for evaluation at the Hyperkinetic Clinic of the Baltimore County Department of Health. The selection criteria for inclusion in the study were: (a) age between 5 years 6 months and 12 years 6 months (i.e., middle childhood); (b) grade kindergarten through sixth grade; (c) no indication of epilepsy, cerebral palsy, or unequivocal brain damage; (d) not on stimulant medication on the day of the initial clinic evaluation; and (e) consent from the parent and child to participate in the study. All the boys in this study were evaluated by medical staff and characterized as having an Attention Deficit Disorder with Hyperactivity. The resulting sample of boys had a mean age of 8 years (*SD* = 1.9 years) and a mean grade of 2.3 (*SD* = 1.7).

Procedure

As mentioned earlier, O'Leary and Steen (1982) have successfully identified independent dimensions of hyperactivity and aggression in a sample of children diagnosed as "hyperactive" using the Stony Brook Scale (SBS). The procedures used in the present study to subcategorize ADDH children were similar to those of O' Leary and Steen.

The following SBS behavioral symptom descriptors were used: control deficits (e.g., delinquent acts, doesn't control self, evasion of rules); negative affect (e.g., excitable, irritable, low frustration tolerance); aggressive interpersonal behavior (e.g., bullies, fights, won't mind); hyperactivity (e.g., always on the go, overactive, restless); inattention (e.g., can't concentrate, distractible, forgetful); and fidgetiness (e.g., can't sit still, fiddles with objects, shifts in his seat). The ratings for each of these symptoms were generated from the teacher rating scale used by the Hyperkinetic clinic. This scale consists of a combination of items from the Conners Teacher Rating Scale (TRS, Connors, 1973) and the Peterson-Quay Behavior Problem Checklist (BPC, Quay & Peterson, 1975).

The teacher rating measure consisted of a 5 point scale (0-4). Computation of SBS symptom scores consisted of the average of all relevant items. Similarly, SBS factor scores for "hyperactivity" and "aggression" were computed by averaging the symptom scores relevant for each factor (i.e., Hyperactive factor: hyperactivity, inattention, and fidgetiness; Aggression factor: control deficits, negative affect, and aggressive interpersonal behavior) (O'Leary & Steen, 1982).

Assessment Procedure

All the children in the study were evaluated by the experimenter. They were each given two individually administered "problem-solving" measures to assess: (1) alternative thinking and (2) means-end thinking. A self-concept measure was also administered individually to all of the children.

Problem-solving Measures

Children's Action Tendency Scale (CATS). The CATS, developed by Deluty (1979), is a self-report questionnaire designed to assess how children might behave in the face of frustration, provocation of conflict, and yields aggressiveness, assertiveness, and submissiveness scores. To assess the subjects'

alternative-solution thinking, 5 scenes from the abridged CATS, depicting various interpersonal-conflict situations, were presented individually to each child. The female experimenter read each conflict situation aloud and asked the child to tell "all the different things that you really might say or do if you found yourself in such a situation." Each alternative was then designated by two independent psychology doctoral students as "aggressive", "assertive", or "submissive," according to definitions delineated by Deluty (1979). The percent agreement between these two independent ratings was acceptable (92%).

Scoring of "alternative thinking" ability was based on: (1) the total number of different alternative solutions generated by the child; (2) the type (e.g., aggressive, assertive, submissive) of alternatives generated; and (3) the proportion of aggressive alternatives generated.

Means-end Problem Solving. A revised version of the original MEPS developed by Shure and Spivack (1972) was used to assess each child's step-by-step planning ability in resolving a problem. Children were told the beginning and the resolution of an interpersonal problem situation, and were then asked to make up the middle of

the story. Each child was administered three stories individually, with the child telling the story while the examiner wrote it down. The stories were about (a) a child who receives a nasty remark and decides to get even; (b) a child who has just moved into a new neighborhood and ends up with many friends; and (c) a child who wants the class to choose him/her as class leader and ends up being so. All of the stories were phrased with a proper name to identify a hypothetical third person as the protagonist (Platt & Spivack, 1975).

MEPS analysis was based on three variables: (1) active means, discrete steps taken by the story protagonist to achieve a story goal and/or to overcome an obstacle; (2) obstacles, actual or potential interference with goal attainment; and (3) time, specific reference to time (e.g., three days later) and/or when the protagonist waits for the most favorable occasion to carry out a means (e.g., waiting until dark...). No score was given for story actions or thoughts that occured after the goal was reached, even though these story elements would have been scored had they occured in the process of reaching a goal (see Platt & Spivack, 1975 for details).

Self-concept

Piers-Harris Children's Self-concept Scale. A self-report inventory, developed by Piers (1969), was used to assess each child's self-perception. This inventory, consisting of 80 yes-no declarative statements, was administered individually to each child. The instructions were read aloud by the experimenter, and the child was requested to "answer the items as you really feel you are, not as you thought you ought to be." The experimenter read each item twice to the child (Piers, 1969). A total positive self-concept score was computed for each child.

Results

Correlations among Teacher Behavior Symptom Ratings

The relationship among the six behavior symptom ratings are presented in Table 1. These correlations

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Insert Table 1 about here

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indicate significant interrelationships among all the ratings, except between attention and hyperactivity. This is consistent with DSM-III classification of ADD with and without Hyperactivity. Moreover, the Hyperactive factor (i.e., hyperactivity, inattention,

and fidgetiness combined) and the Aggressive factor (conduct disorder, non-compliance, and aggression combined) were significantly correlated (r = .78).

Relationship between ICPS and Adjustment

The extent to which the childrens' alternative generation and means-end thinking were related to adjustment can be seen in Table 2. As evident from

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Insert Table 2 about here

Table 2, teachers' behavior ratings were significantly correlated with means and time (means-end thinking). However, none of the correlations between alternative-thinking and teachers' behavior ratings were significant. Similary, none of the ICPS measures were significantly correlated with self-concept, except for a significant relationship between obstacles and self-concept. (Although statistically significant, the validity of this relationship is limited by the small number of obstacles scored.).

A negative relationship between means and teachers' ratings was found, which indicated that children rated as more problematic generated fewer means. This relationship is consistent with the premise that ICPS skills are greater for adjusted children.

Multiple regression analysis (see Table 3) revealed that the number of means generated by the children was a significant predictor of teachers' behavior symptom ratings (statistically significant, $p<.05$; except for inattention and hyperactivity, $p<.10$). The T-statistics for the significance of each independent variable (i.e., means, alternatives, and self-concept) in predicting teachers' behavior ratings are presented in Table 3.

Insert Table 3 about here

In order to elucidate the relationship between teachers' ratings and means-end thinking, age was controlled for. Age was significantly correlated ($p<.01$) with all of the behavior symptom ratings and with "means" but not with any of the other problem-solving or self-concept measures.

Using multiple regression analyses, age predicted 32% of the variance of the aggression factor and 43% of the hyperactive factor (all statistically significant, $p<.05$). After controlling for the variance accounted for by age there were no significant relationship between the ICPS skills, self-concept, and teacher ratings. Futhermore, multiple regression analyses

revealed that the number of means generated by the children did not improve prediction of teachers' behavior ratings beyond that accounted for by age. The T-statistics for the regression coefficients of each independent variable (i.e., means, alternatives, and self-concept) for predicting teachers' behavior ratings with age partialled out are presented in Table 4.

Insert Table 4 about here

Overall, age was the only significant predictor of adjustment, as measured by the teachers' behavior rating scales. Thus, the notion that means-end thinking and/or alternative-thinking mediates social competence and behavioral adjustment above that accounted for by age was not supported.

Subcategorizing Hyperactivity and Aggressiveness

The ICPS measures were further evaluated as to whether means-end thinking and alternative thinking are different for children rated as being more (HA-AGG) or less behaviorally problematic (HA). All the children in this study were evaluated as having an ADD with Hyperactivity, therefore, they were all exhibiting some degree of behavior and attentional problems. Given

the heterogeneity in both the degree and type of behaviors exhibited by these children, a comparison was made between those children with hyperactivity alone with those exhibiting hyperactive as well as aggressive behaviors.

Based on teachers' ratings, children were divided into HA and HA-AGG groups. The HA-AGG group consisted of children with scores > 16 (i.e, median score) on the behavior symptom ratings. Children rated as HA-AGG were expected to generate less alternatives, less means, and a higher proportion of aggressive alternatives than the group rated as HA alone.

The mean age for the HA group was 8.8 years (*SD* = 22.8 months) and the mean age for the HA-AGG group was 7.24 (*SD* = 17.3). Analysis of variance indicated these two groups of children (*n* = 15, in each group) differed significantly in age, F (1, 28) = 6.70, $p < .05$. The children rated as being more behaviorally problematic were significantly younger than the others. Similarly, the mean grade for HA-AGG group was 1.7 (*SD* = 1.4) while for the HA group the mean grade was 2.9 (*SD* = 1.9). Analysis of variance, once again, revealed that HA and HA-AGG children differed significantly in grade, F (1, 28) = 4.42, $p<.05$.

Additional analyses of variance were performed to examine whether these groups differed in terms of ICPS skills. The HA and HA-AGG groups did not differ significantly in the number of alternatives generated, the proportion of aggressive alternatives, means-end thinking, or self-concept. There was a tendency, however, for the HA group to generate more aggressive alternatives (M = 5.5) than the HA-AGG (M = 3.6) group, F (1, 28) = 3.31, $p<.08$. Similarly, the HA group tended to generate more means (2.1) to the first story presented, than the HA-AGG group (1.0). However, once again, this difference did not reach statistical significance, F (1, 28) = 3.94, $p<.06$.

Discussion

The present results indicated that behavior symptom ratings of hyperactivity and aggressiveness were highly correlated. These findings, unlike those of O' Leary and Steen (1982), Loney et al. (1982), and Milich et al. (1982), do not provide support for the independence of aggressive and hyperactive dimensions of behavior. Overall, teachers' behavior symptom ratings did not delineate subgroups of hyperactive children.

The present findings are consistent with those of Lahey et al. (1982), indicating that although

hyperactive and aggressive factors are significantly related, attention and hyperactivity behavior symtpom ratings are not. This latter finding is in accordance with the DSM-III classification of the disorder, which suggests that ADD can occur with or without hyperactivity. The relationship between these behaviors deserves further investigation. For example, research should focus on determining whether the attentional difficulties are the same for children with and without hyperactivity.

Overall, these findings allow us to conlude that for the children in this study, hyperactive and aggressive dimensions of behavior are highly correlated. This conclusion is, however, merely tentative and needs to be replicated with different samples of clinic children as well as different indices of behavioral adjustment. A major limitation to the interpretation of these findings concerns the use of the behavior checklist, at the clinic, to generate the SBS symptom ratings. O'Leary and Steen (1982), Milich et al. (1982) have used the TRS (Conners, 1973) and BPC (Quay & Peterson, 1975), directly, to generate the SBS symptom ratings. Although the teacher checklist employed in the present study consists of items from both the TRS and BPC, the overall SBS symtpom ratings may differ.

Researchers, as well as clinicians, rely heavily on teachers' ratings in the diagnosis of ADD with and without Hyperactivity as well as in the evaluation of therapeutic outcomes (cf., Barkley, 1981). Teachers' ratings are frequently used as indices of childrens' behavioral adjustment. The present study, therefore, examined the relationship between teachers' behavior ratings and ICPS measures. Based on the theoretical premise that ICPS skills are mediators of behavioral adjustment (Shure & Spivack, 1974) a significant negative relationship was expected between teachers' ratings and ICPS skills. The only relationship consistent with this premise was that between the number of means generated and teachers' behavior ratings; however, this relationship was mediated by age. In fact, age, a developmental factor, was found to be the only significant predictor of teachers' ratings.

These findings do not support the premise that means-end thinking and alternative thinking are mediators of behavioral adjustment, idependent of age (Spivack & Shure, 1974, 1976). These findings are consistent with those of Almeida and Denham (1984), Kendall and Fischler (1984), and Kazdin, Matson, and Esveld-Dawson (1984). In general, the findings from

these investigations have been inconsistent with the theoretical premise that ICPS skills are related to specific types of adjustment (Spivack & Shure, 1974, 1976). For example, the study by Kendall and Fischler (1984) indicated that childrens' ICPS skills were not systematically related to teacher and parents' ratings of adjustment. Similarly, the findings from the present investigation did not reveal any systematic relationship between teachers' behavior ratings and alternative thinking (neither the number nor the types of alternatives) or with means-end thinking. Overall, these findings cast doubt on the validity of ICPS skills as mediators of social competence, especially for hyperactive children.

The indices of child adjustment used in the present study differed from the Devereaux Elementary School Scale (DESBS) used by Spivack and Shure (e.g, 1974, 1976); therefore the present findings are not directly comparable. Nevertheless, other investigators using the DESBS (Kendall & Fischler) as well as other measures of adjustment have found similar results (cf., Kazdin et al., 1984).

It was hypothesized that ICPS skills would be related to specific types of maladjustment.

Specifically, that children rated as more problematic (HA-AGG) would generate less ICPS solutions. The findings did not support this. There were no significant differences between the ICPS skills of the HA and HA-AGG children. Although there was a tendency for the HA (i.e., older children) to generate more aggressive alternatives and more means, this may, however, be attributed to the fact that these children are older and may, therefore, be able to generate longer and more elaborate solutions (i.e., larger vocabulary available). Unfortunately, these are mere assumptions and remain to be confirmed. These findings suggest that the relationship between higher ICPS and better adjustment, which has been the basis for the development of ICPS training programs, is not evident for behavior disordered children (cf., Camp et al., 1977; Kazdin et al., 1984).

In conclusion, continued replication and refinement of the ICPS theory and its application is necessary with special populations of children. Future research should focus on the identification of factors mediating the social interactions of these children. Only after we understand these processes and the skills necessary for effective and rewarding social interactions, can we focus on the development of intervention programs to foster the social competence of hyperactive children.

References

Almeida, M. C., & Denham, S. (1984, April). *Interpersonal problem solving skills: A meta-analysis*. Paper presented at the meeting of the Eastern Psychological Association, Baltimore, MD.

American Psychiatric Association, (1980). *Diagnostic and statistical manual of mental disorders (3rd ed.)*. Washington, D.C.: American Psychiatric Association.

Barkley, R. A. (1981). *Hyperactive children: A handbook for diagnosis and treatment*. New York: Guilford Press.

Camp, B. W., Blom, G. E., Herbert, F., & vanDoornick, W. J. (1977). "Think aloud": A program for developing self-control in young aggressive boys. *Journal of Abnormal Psychology, 5*, 157-169.

Conners, C. K. (1973). Rating scales for use in drug studies with children. *Psychopharmacology Bulletin* (Special Issue - Psychopharmacology in children), 24-84.

Deluty, R. H. (1979). Children's Action Tendency Scale: A self-report measure of aggressiveness, assertiveness, and submissiveness in children. *Journal of Consulting and Clinical Psychology, 4*, 1061-1071.

Deluty, R. H. (1981). Alternative-thinking ability of aggressive, assertive, and submissive children. *Cognitive Therapy and Research, 5*, 309-312. (a)

Deluty, R. H. (1981, Fall). Adaptiveness of aggressive, assertive, and submissive behavior for children. Journal of Child Clinical Psychology, 155-158. (b)

Gesten, E. L., Raine, M. H., Rapkin, B. D., Weissberg, R. P., Flores de Apocada, R., Cowen, E. L., & Bowen, R. (1982). Training children in social problem-solving competencies: A first and second look. American Journal of Community Psychology, 10, 95-115.

Gillespie, J. F., Durlak, J. A., & Sherman, D. (1982). Relationship between kindergarten children's interpersonal problem-solving skills and other indices of school adjustment: A cautionary note. American Journal of Community Psychology, 10, 149-153.

Henker, B., & Whalen, C. K. (1980). The changing faces of hyperactivity: Retrospect and prospect. In C. K. Whalen & B. Henker (Eds.). Hyperactive children: The social ecology of identification and treatment (pp. 321-363). New York: Academic Press.

Kazdin, A. E., Matson, J. L., & Esveldt-Dawson, K. (1984). The relationship of role-play assessment of children's social skills to multiple measures of social competence. Behavior Research and Therapy, 22, 129-139.

Kendall, P. C., & Fischler, G. L. (1984). Behavioral and adjustment correlates of problem solving: Validation analyses of interpersonal cognitive problem-solving measures. Child Development, 55, 879-892.

Klein, D. F., Gittelman, R., Quitkin, F., & Rifkin, A. (1980). Diagnosis and drug treatment of psychiatric disorders: Adults and children (2nd ed.). Baltimore: Williams & Wilkins.

Lahey, B. B., Green, K., & Forehand, R. (1980). On the independence of ratings of hyperactivity, conduct problems, and attention deficits in children: A multiple regression analysis. Journal of Consulting and Clinical Psychology, 48, 566-574.

Loney, J., Langhorne, J. E., & Paternite, C. E. (1978). An empirical basis for subgrouping the hyperkinetic/minimal brain dysfunction syndrome. Journal of Abnormal Psychology, 87, 431-441.

Loney, J., Weissenburger, F. E., Woolson, R. F. & Lichty, E. C. (1979). Comparing psychological and pharmacological treatments for hyperkinetic boys and their classmates. Journal of Abnormal Child Psychology, 7, 133-143.

Marsh, D. T. (1982). The development of interpersonal problem solving among elementary school children. The Journal of Genetic Psychology, 140, 107-118.

McKim, B. J., Weissberg, R. P., Cowen, E. L., Gesten, E. L., & Rapkin, B. D. (1982). A comparison of the problem solving ability and adjustment of suburban third-grade children. American Journal of Community Psychology, 10, 155-169.

Milich, R., & Landau, S. (1982). Socialization and peer relations in hyperactive children. *Advances in Learning and Behavioral Disabilities*, *1*, 283-339.

Milich, R., Loney, J., & Landau, S. (1982). Dependent dimensions of hyperactivity and aggression: A Validation with playroom observation data. *Journal of Abnormal Psychology*, *91*, 183-198.

O'Leary, S. G., & Steen, P. L. (1982). Subcategorizing hyperactivity: The Stony Brook Scale. *Journal of Consulting and Clinical Psychology*, *50*, 426-432.

Pellegrini, D. S., & Urbain, E. S. (1985). An evaluation of interpersonal cognitive problem solving with children. *Journal of Child Psychology and Psychiatry*, *26*, 17-42.

Piers, E. V. (1969). *Manual for the Piers-Harris Children's Self-concept scale (The way I feel about myself)*. Nashville, Tenn.: Counselor Recording & Tests.

Platt, J. J., & Spivack, G. (1975). *Manual for the Means-Ends Problem-Solving Procedure (MEPS)*. Philadelphia: Department of Mental Health Services, Hahnemann Community Mental Health/Mental Retardation Center.

Prinz, R. J., Connor, P. A., & Wilson, C. C. (1981). Hyperactive and aggressive behaviors in childhood: Intertwined dimensions. *Journal of Abnormal Child Psychology*, *9*, 191-202.

Quay, H. C., & Peterson, D. R. (1975). Manual for the Behavior Problem Checklist. Unpublished manuscript, University of Miami.

Rapoport, J. L., & Ferguson, H. B. (1981). Biological validation of the hyperkinetic syndrome. Developmental Medicine and Child Neurology, 23, 667-682.

Ross, D. M., & Ross, S. A. (1976). Hyperactivity: Research, theory, and action. New York: Wiley & Sons.

Ross, D. M., & Ross, S. A. (1982). Hyperactivity: Current issues, research and theory (2nd ed.). New York: Wiley & Sons.

Sharp, K. C. (1981). Impact of interpersonal problem-solving training on preschoolers' social competency. Journal of Applied Developmental Psychology, 2, 129-143.

Shure, M. B., Newman, S., & Silver, S. (1973). Problem-solving thinking among impulsive and inhibited Head Start children. Paper presented at the meeting of the Eastern Psychological Association, Washington, D.C.

Shure, M. B., & Spivack, G. (1972). Means-end thinking, adjustment, and social class among elementary school-aged children. Journal of Consulting and Clinical Psychology, 38, 348-353.

Shure, M. B., & Spivack, G. (1979). Interpersonal problem-solving and primary prevention: Programming for preschool and kindergarten children. Journal of Clinical Child Psychology, 2, 89-94.

Shure, M. B., & Spivack, G. (1980). Interpersonal problem-solving as a mediator of behavioral adjustment in preschool and kindergarten children. Journal of Applied Developmental Psychology, 1, 29-40.

Shure, M. B., & Spivack, G. (1982). Interpersonal problem-solving in young children: A cognitive approach to prevention. American Journal of Community Psychology, 10, 341-356.

Spivack, G., & Shure, M. B. (1974). Social adjustment of young children. San Francisco: Jossey-Bass.

Spivack, G., & Shure, M. B. (1982). The cognition of social adjustment: Interpersonal cognitive problem solving thinking. In B. B. Lahey & A. E. Kazdin (Eds.), Advances in clinical child psychology (vol. 5) (pp. 323-372). New York: Plenum Press.

Spivack, G., Platt, J. J., & Shure, M. B. (1976). The problem-solving approach to adjustment. San Francisco: Jossey-Bass.

Urbain, E. S., & Kendall, P. C. (1980). Review of social-cognitive problem-solving interventions with children. Psychological Bulletin, 88, 109-143.

Weiss, G., Hechtman, L., & Perlman, T. (1978). Hyperactives as young adults: School, employer, and self-rating scales obtained during a ten-year follow-up evaluation. American Journal of Orthopsychiatry, 48, 438-445.

Whalen, C. K. (1983). Hyperactivity, learning problems, and attention deficit disorder. In T. H. Ollendick & M. Hersen (Eds.). Handbook of child psychopathology (pp. 151-200). New York: Plenum Press.

Whalen, C. K., Henker, B., Collins, B. E., McAuliffe, S., & Vauz, A. (1979). Peer interaction in structured communication task: Comparisons of normal and hyperactive boys and of methylphenidate (Ritalin) and placebo effects. Child Development, 50, 388-401.

Table 1

Intercorrelations among Teachers Behavior Symptom Ratings

	Behavior Symptom				
Behavior Symptom	1	2	3	4	5
1. Conduct disorder					
2. Negative Affect	.865**				
3. Aggression	.930**	.829**			
4. Hyperactive	.702**	.607**	.645**		
5. Inattention	.458*	.426*	.456*	.264	
6. Fidgetiness	.761**	.662**	.769**	.796**	.533**

*p<.05. **p<.01.

Table 2

Correlations between Problem Solving Measures and Adjustment Measures

	Teacher Ratings		Self-Concept
Measures	Aggress	Hyper	
CATS			
Aggressive	-.06	-.03	.17
Submissive	-.10	-.21	.16
Assertive	-.11	-.16	.07
MEPS			
Means	-.46*	-.49*	.12
Obstacles	-.11	-.16	.41*
Time	-.36*	-.36*	.05

Note. The "Aggress" score was obtained by averaging the teachers' ratings for the following behavior symptoms: conduct disorder, negative affect, and aggression. The "Hyper" score was obtained by averaging the the behavior ratings for hyperactivity, inattention, and fidgetiness.

* $p < .05$.

Table 3

T-statistics for the Significance of each Independent Variable for Predicting Teacher Ratings (Age Retained)

Independent Variables	Behavior Symptoms					
	CD	NA	AGG	HYP	ATT	FIDG
Means	-2.53**	-2.47**	-1.96**	-1.99*	-2.68**	-2.18**
Alternatives:						
Aggressive	.16	.18	.02	-.13	.26	.68
Submissive	-.09	-.34	-.16	-.60	-.68	-1.15
Assertive	-.08	-.83	-.23	-.43	-1.30	-.56
Self-concept	.32	.16	.18	1.21	.66	1.37

Note. CD = conduct disorder; NA = negative affect; AGG = aggressive interpersonal behavior; HYP = hyperactivity; ATT = inattention; FIDG = fidgetiness.

** p<.10. * p<.05.

Table 4

T-statistics for the Significance of each Independent Variable for Predicting Teacher Ratings with Age Partialled Out

	Behavior Symptoms					
Independent Variables	CD	NA	AGG	HYP	ATT	FIDG
Means	-.92	-.89	-.45	-.26	-1.53	-.56
Alternatives:						
Aggressive	-.26	-.28	-.09	-.01	-.35	-.89
Submissive	-.00	-.27	-.08	-.52	-.62	-1.14
Assertive	.02	-.80	-.15	-.33	-1.26	-.48
Self-concept	-.44	-.61	-.57	.31	.19	.56

Note. CD = conduct disorder; NA = negative affect; AGG = aggressive interpersonal behavior; HYP = hyperactivity; ATT = inattention; FIDG = fidgetiness.